

Exhibit IV – Literature Review

Hall Associates

Rehabilitation Consultants

7290 Navajo Road. #105 San Diego, CA 92119

Office (619) 463-9334 Fax (619) 463-9337

info@rehabsource.org

Re: Horsley, Legare vs. Department of Education, State of Hawaii, et al.

Summary

In order to best understand the issues surrounding these cases we conducted an extensive literature review with regard to impairment, disability, education, and employment statistics.

General Disability & Employment Statistics

1) LaPlante, M., Sebasta, D., Trupin, L. & Yelin, (1997). Trends in labor force participation among persons with disabilities, 1983-1994. *Disability Statistics Rehabilitation Research & Training Center*. University of California, San Francisco.

- In 1994, People with Mental Retardation/Down's Syndrome had an estimated labor force participation rate of 33.5%, compared to the labor force participation of people without disabilities which was 83%.

2) Steinmetz, Erica, J. (2002). *Americans with Disabilities 2002*. U.S. Census Bureau: Table 5.

- According to Table 5: Disability Status, Employment, and Annual Earnings: Individuals 21 to 64 years old: 2002, the employment rate for people with no disability was 88.2%, in comparison to the employment rate for people with a learning disability (57.9%), Mental retardation (29.9%) or Severe difficulty having speech understood (39.9%).
- People with a general severe disability had an employment rate of 42.5%, severe being defined as requiring ongoing extensive support in more than one major life activity in order to participate in integrated community settings.

3) 2006 Disability Status Report: Hawaii. Cornell University. www.DisabilityStatistics.org.

- In 2006, the employment rate of working-age people with disabilities in Hawaii was 42.4%; 22.8 % were working full time.
- More specifically, the employment rate for people with a mental disability in Hawaii in 2006 was 30.8%, mental defined as people who have difficulty learning, remembering, or concentrating.
- The median annual labor earnings of working-age people with disabilities in 2006 for Hawaii were \$33,000.

4) Parker, R. & Szymanski, E. (2003). Work and disability: issues and strategies in career development and job placement (2nd ed), Table 3.5. Austin, TX: Pro-ed.

- The employment rate of men living in Hawaii who have work limitations was 38.7% from 1990-1998.
- The employment rate of women living in Hawaii who have work limitations was 38% from 1990-1998.
- From 1983-1996, the employment rate of people with speech impairments who also have work limitations (ages 25-61), was 30.1% (men) and 18.9% (women).

5) A longitudinal study of the vocational rehabilitation service program (3rd Interim Report: Characteristics and Outcomes for Former VR Consumers with an Employment Outcome). (1998). Research Triangle Institution, in partial fulfillment of requirements under ED Contract No. HR92-022-001. Table 8: Mean Hourly Wage at Closure – Competitive Employment Outcomes & Table 9: Mean Weekly Hours Worked at Closure – All Employment Outcomes.

- This article analyzed the performance of the state-federal VR program and was mandated by Congress in the 1992 Rehabilitation Act Amendments.
- For persons with disabilities who had never worked for two consecutive weeks prior to their application for VR services, only 3.6% had competitive employment by the end of the study.
- For VR consumers who obtained a competitive job through the VR, the mean hourly wages were \$7.35, and for those with less than a high school degree the mean hourly wages were \$6.30.
- In Hawaii, the mean hourly wage for persons with disabilities was \$10.02 and the mean weekly hours worked was 27.24.

Educational Attainment

National Longitudinal Transition Study 2: Facts from NLTS2. High school completion by youth with disabilities. (2005). Project Officer: Patricia Gonzalez in the National Center for Special Education Research, prepared for the Institute of Education Sciences under Contract No. ED-01-CO-003.

- This article looked at factors associated with completion of high school for youth with disabilities and followed them after high school.
- High school completion rates were as follows: persons with autism (86%), person with a speech/language impairment (79%), persons with mental retardation (72%), and persons with multiple disabilities (65%).
- After high school, 5% of graduates enrolled in a vocational/technical/business school and 39% enrolled in postsecondary education. Of those who do not complete high school, 8% enroll in a vocational/technical/business school and 9% in postsecondary education.

- In regards to employment experiences, of those who completed high school 46% were employed, and of those who did not complete high school 38% were employed.
- 78% of students who completed high school were living with their parents up to two years after high school, and 57% of students who did not complete high school were also still living with their parents two years after high school.

Autism/Autism Spectrum Disorder & Asperger Syndrome

- 1) Inge, K. (2007). **Supporting individuals with autism in integrated community jobs: identifying support needs to facilitate success.** CRP-RCEP, Virginia Commonwealth University.
 - This article discusses poor employment outcomes for individuals with autism spectrum disorder and offers some suggestions on how to work towards changing that.
 - The Rehabilitation Services Administration (RSA) reported 0.6% successful VR closures in 2005 that were individuals with autism.
 - Difficulty communicating, limited social skills and unusual behaviors are just a few of the barriers for individuals with autism however, with individualized accommodations there is still hope for continued successful closures.
- 2) Ross, D., Garcia-Villamizar, D. & Wehman, P. (2000). **Clinical differential analysis of persons with autism in a work setting: a follow-up study.** *Journal of Vocational Rehabilitation* 14, 183-185.
 - This article discusses why adults with autism have typically not been considered suitable candidates from employment.
 - The experience of the last decade is that people with autism can benefit from supported employment programs.
 - The problems usually consist of reliance on routine, lack of communication and social skills, and difficulty changing tasks throughout the day.
 - Discusses that having autism does not make a person unemployable; rather, people with moderate autism showed excellent results in supported employment programs.
 - They also stated that there is little research that has been conducted on competitive employment outcomes for people with autism.
- 3) Patterson, A. & Rafferty, A. **Making it to work: towards employment for the young adult with autism.** School of Psychology and Communication. Newtownabbey, CO: Univeristy of Ulster.
 - This article states that schools are working hard to equip autistic students with the necessary skills to integrate and function in employment; though to date success is limited.

- They found IQ to be a strong predictor of educational outcome.
- They feel that all schools will likely have to examine and revise provision for young students with ASD to prepare them for employment and further education.

4) Goode, S., Howlin, P., Hutton, J. & Rutter, M. (2004). Adult outcome for children with autism. *Association for Child Psychology and Psychiatry* 45(2), 212-229. Oxford, UK: Blackwell Publishing.

- This article states that the availability of information about prognosis remains inconclusive because of the heterogeneity of subjects, the variability of outcome measures used and other fundamental problems of research design.
- Examples they offer for autistic sheltered work include factory work, data input, assembly work, electronic work, gardening and office assistant.
- Through their long term study they concluded that the majority of autistic individuals remained highly dependent on families or required some form of residential provision. Even amongst those in employment, jobs tended to be poorly paid and did not provide individuals with adequate financial support to live independently.
- Overall, few of the autistic participants could be considered fully self-supporting.
- The huge increase in educational facilities for children with autism had not necessarily resulted in significant improvements in outcome for adults.
- Outcome is almost always poor for individuals with childhood IQ of below the 50-70 range.
- Few people at an autistic cognitive level achieve independence as adults.
- IQ generally remained stable over time.

5) Billstedt, E., Gillberg, c. & Gillberg, C. (2005). Autism after adolescence: population based 13 to 22 year follow-up study of 120 individuals with autism diagnosed in childhood. *Journal of Autism and Developmental Disorders*. 35(3), 351-360.

- This article is the self-proclaimed longest and largest prospective follow-up study ever published of a community sample of individuals with autism followed from childhood through adolescence into adulthood.
- According to studies, about two-thirds of people with autism had no indication of independence (work, education, independent living) in early adult life.
- Major medical problems were very common among the study group including catatonia.

Mental Retardation & Developmental Disabilities

1) Gilmore, D. & Fichthorn, K. (2006). Data Note: relationship between integrated employment and state unemployment rates for MR/DD consumers.

- This article compares integrated employment rates to unemployment rates state by state.

- In 2001, there were over 400,000 people who received employment supports from MR/DD agencies, of which 23% were employed.
- Their major finding was that there is no correlation between the percentage of consumers in integrated employment and the unemployment rate.

2) Kaye, H. (2003). Improved employment opportunities for people with disabilities. Disability Statistics Center & Institute for Health and Aging: University of California, San Francisco.

- This article examines the different causes of inability to work.
- Mental Retardation is one of the top ten conditions that cause working age adults the inability to work, with 322,000 people with MR out of the labor market (1988-1996).
- reason which explains why people with MR have lower labor force participation is their severe functional limitations.

3) Gray, B., McDermott, S. & Butkus, S. (1999). Effect of job coaches on employment likelihood for individuals with mental retardation. *Journal of Vocational Rehabilitation*: 14, 5-11.

- This article takes a look at the employment experience of individuals with Mental Retardation.
- In South Carolina, 1997, 24.9% of people with an IQ of 30-39 were unemployed, and 14.3% of people with an IQ 40-49 were unemployed.
- The most important finding of their study was that job coaches have had some success in job placement of individuals with an IQ of less than 40.

4) Alston, R., Feist-Price, S. & Moore, C. (2002). Competitive employment and mental retardation: interplay among gender, race, secondary psychiatric disability, and rehabilitation services. *Journal of Rehabilitation* 68 (1), 14-19.

- This article discusses research on the rehabilitation outcomes of person with mild/moderate mental retardation.
- Research shows that of the people with mental retardation who do become employed, the majority work in sheltered workshops.
- People with mental retardation who receive job placement services are more likely to obtain competitive employment compared to those who did not receive the services.

5) Butkus, S., McDermott, S. & Moran, R. (2001). Getting a job, sustaining a job, and losing a job for individuals with mental retardation. *Journal of Vocational Rehabilitation* 16, 237-244.

- This article talks about the impact of personal and community characteristics for individuals who were employed for 3-6 months.

- The study states that job loss for individuals with mental retardation is a common event; during their study it occurred 28% of the time.
- They also looked at IQ scores being predictive of job placement and job loss.
- 42% of their respondents with an IQ of 20-40 were unemployed.

6) Kiernan, W. (2000). Where we are now: perspectives on employment of person with mental retardation. *Focus on Autism and Other Developmental Disabilities* 15(2), 90-96.

- This article seeks to find an answer to the low employment rate of persons with mental retardation, including inclusive design, universal application, and a career development strategy.
- They found that the rate of unemployment for persons with mental retardation hovers around 70% (1994-1995).
- Even with the ADA and work incentives through the SSA, labor force participation of individuals with MR has not significantly risen.

Summary

This literature review was conducted to obtain baseline information with regard to typical outcomes for persons more significant and work limiting disabilities, in particular persons with autism and mental retardation. Both Federal and State data resources were utilized, including the largest, most reliable federal surveys of disability prevalence and status, employment, and earnings.

In summary, although some progress has been made in understanding which services lead to improved employment and earnings outcomes, most persons with significant and more severe disabilities do not work competitively and earn little income. In all cases, the probability of persons with this level of disability working competitively and maintaining an employment role over their life span is well below 50%. Work tends to be sporadic, part-time, and produces little income. Most persons receive federal disability benefits (SSI) and maintain those over their lifespan.

Integrated community employment strategies offer some advantages over sheltered employment, but most persons with significant mental retardation who maintain employment do so in sheltered employment. Intensive job coaching and supervision as part of a supported employment program can improve outcomes somewhat, they are difficult to maintain over time.

Autistic persons, especially those with fewer functional limitations and higher IQ do have more employment potential, but there is little data available, especially longitudinal employment data. Those autistic persons with other work limiting impairments and lower IQ have lower employment rates and greater work retention problems.

**A LONGITUDINAL STUDY OF THE
VOCATIONAL REHABILITATION SERVICE PROGRAM**

Third Interim Report:

**Characteristics and Outcomes
of Former VR Consumers
with an Employment Outcome**

August 1998

**Submitted by
Research Triangle Institute**

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U.S. Department of Education**

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CHAPTER 1: INTRODUCTION

Initiated in fall 1992, the Longitudinal Study of the Vocational Rehabilitation (VR) Services Program will address key questions of interest to Congress, the Rehabilitation Services Administration (RSA), state VR agencies, and consumers about the performance of the state-federal VR program. The study's design, reflecting the typical service patterns of VR program participants, calls for repeated contacts with individuals over a three-year period to obtain comprehensive information to support judgments about the benefits to consumers and to society of the VR system as it currently operates.

Because of the longitudinal nature of the study, RSA in designing it called for a number of interim reports that would, in an incremental fashion, begin making study findings available to policy makers and practitioners as the study proceeded over a six-year period. This report is the third of four interim reports that, along with the study's final report, will answer the study's questions about the program's impacts on participants. To orient readers to the study, this chapter of the report provides an overview of the study's information goals and reporting schedule, data collection design and activities, and current status.

This report contains selected preliminary findings on the characteristics and outcomes of VR consumers who achieved an employment outcome as a result of VR services. While these findings are preliminary and may change somewhat following completion of the study's data collection activities in fall 1999, they are generalizable to the population of individuals with disabilities who received VR services and achieved a competitive or other type of employment outcome. To begin to address questions regarding the benefits of VR services to consumers, we have focused the analyses for this report primarily on persons who achieved competitive employment. We also report information on characteristics and experiences of persons whose employment outcome was not competitive, when such comparisons help to shed light on factors that may be associated with different types of outcomes.

The remainder of the report contains the following chapters. Chapter 2 includes a profile of former VR consumers who achieved an employment outcome: topics include (1) disability and demographic characteristics, (2) history of labor force participation, and (3) an overview of services received under an Individualized Written Rehabilitation Program (IWRP). Chapter 3

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presents findings on the employment and earnings of persons who achieved competitive employment at closure from VR and at one-year follow up. It includes the following sections: (1) type of job, hours worked, and hourly earnings for job at closure; (2) descriptive information on earnings by various characteristics (e.g., severity of disability, educational attainment and achievement levels); and (3) employment and earnings status of these persons one year after exit from VR services.

The findings contained in these chapters come from three primary sources. First is information abstracted from VR case files. Second is a detailed work history interview administered to all study participants at the time of their entry into the study. The third is a follow-up interview administered one year after the participant's exit from VR services. The interview collects information on current employment and earnings status, including changes since exit from VR, receipt of services or benefits, and community integration.

Remaining sections of this chapter review the longitudinal study's reporting schedule, data collection design, and current status, for the convenience of readers who may be unfamiliar with the study's activities.

The Study's Information Goals and Reporting Schedule

Commissioned by RSA and mandated by the Congress in the 1992 Rehabilitation Act Amendments, the VR longitudinal study has been designed to answer the following questions:

- What short- and long-term economic and noneconomic (e.g., independent living, community integration) outcomes do VR applicants and consumers achieve as a result of their participation in VR?
- What characteristics of individuals with disabilities affect their (1) access to and receipt of VR services and (2) short- and long-term outcomes?
- To what extent does receipt of specific VR services contribute to successful consumer outcomes?
- In what ways and to what extent do local environmental factors influence VR consumers' services and outcomes?

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- In what ways and to what extent do the operations, resources, and organizational climate of VR agencies influence consumers' services and outcomes?
- What is the return on the VR program's investment?

Definitive findings that address these study questions will require completion of the study's longitudinal data collection activities, scheduled for fall 1999. Over the study period, the study's design has permitted us to prepare interim findings on topics selected in consultation with RSA officials. The first interim report, completed in October 1995, contained profiles of the local offices and their environments, based primarily on analyses from the 1990 decennial census and a mail survey of each of the 40 local VR offices participating in the study. The second interim report, completed in December 1996, described (1) characteristics of current and former VR consumers; (2) history of labor force participation among VR consumers; and (3) consumers' perspectives of their VR services, service providers, and other aspects of their involvement with the VR program. As noted previously, this third interim report contains descriptive findings on characteristics of persons who achieved an employment outcome, including work history and details of their post-VR employment and earnings status. A subsequent interim report is scheduled for spring 1999, with the final report and public-use data files scheduled for release in late 1999.

Data Collection Design

Collection of information required to address the evaluation's questions, which began in November 1994, is continuing. We are implementing a multistage design that initially involved selection of a random sample of 40 local VR offices (in 32 state agencies located in a total of 30 states) and a sample of 8,500 current and former consumers of VR services. Owing to difficulties in employing and retaining qualified individuals to serve as field data collectors, we have experienced some attrition, and at present, data collection continues in 37 of the original 40 offices selected for study. Figure 1 indicates the states in which the participating offices operate.

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Additionally, the original intent was to include a sample of 10,000 consumers, to enter the study over a 12 to 18-month period. The complexity of the data collection design, along with attrition and a variety of logistical changes in local office operations around the country, meant that sample acquisition extended over 24 months, rather than the time originally intended. The period of sample acquisition, which has paralleled a period of numerous changes in VR program operations and activities (resulting from changes in the 1992 Amendments and a variety of other factors), led us to modify the sample design by reducing the total number of target participants while not sacrificing precision necessary to address the study's broad research questions.

In order to assess the longer term outcomes of VR participation, the study is implementing a cohort design that entails random selection of individuals at one of three stages of involvement with VR. We selected 25 percent of the total sample (approximately 2,125 persons) when they were in the application stage; the larger cohort, 50 percent of the sample (4,250 persons), entered the study while they were receiving VR services. The third cohort, 25 percent of the sample (2,125 persons), entered the study at or after VR case closure.

We follow each individual for a total of three years; some will still be receiving VR services at the end of the three-year period, although most will have left VR and be working, receiving other services, or engaging in a variety of other activities. Following baseline data collection, we conduct an annual interview with each study participant, the topics of which depend on the individual's current circumstances in regard to VR services. This design accommodates the average length of stay in VR (nearly two years) while at the same time permitting us to track the post-VR earnings, employment, and community integration of individuals following exit from VR as either "successful" or "unsuccessful" closures.

*Introduction***Figure 1. Location of Offices Participating in the Longitudinal Study**

Figure 2 summarizes the data collection instruments and administration schedules for the study. As noted, the study's field data collectors are gathering detailed information through baseline and annual interviews with study participants as well as through abstraction of case file information. Additionally, we are obtaining information from local office managers, rehabilitation counselors, and other office staff, along with information from state VR agencies on policies and procedures that affect the delivery and outcomes of services. For active consumers, file data collection occurs quarterly until closure.

*Introduction***Figure 2. Data Collection Instruments, with Method and Frequency of Administration.**

<i>INSTRUMENT</i>	<i>METHOD</i>	<i>FREQUENCY</i>
Consumer interviews		
Work history	Personal/telephone interview	Baseline
Functional status	Personal/telephone interview	Baseline and case closure
Satisfaction	Personal/telephone interview	Baseline and annually to closure
Annual follow up	Telephone interview	Annually from closure of case file
Consumer records		
Consumer characteristics	Records abstraction	Baseline with quarterly updates
Services	Records abstraction	Baseline and quarterly
Agency instruments		
State policies and procedures form	Mail/self-administered	Baseline with annual updates
Local office manager questionnaire	Mail/self-administered	Baseline with annual updates
Other office staff questionnaire	Mail/self-administered	Baseline and end of data collection
VR counselor questionnaire	Mail/self-administered	Baseline and end of data collection

Current Status of Data Collection

As noted earlier, sample acquisition and baseline data collection, including extensive interviews with study participants and abstraction of detailed information from case files, began in November 1994 and extended through November 1996. By January 1998, approximately two-thirds of these study participants had exited VR services. For these individuals, ongoing data collection comprises annual follow-up interviews for a total of three years. For the one-third of study participants who are still receiving VR services, data collection includes quarterly review of case files to collect information on any changes since the prior update (e.g., change in vocational goal on the IWRP or receipt of an additional service) and an annual interview to obtain the consumer's perspectives of the VR experience. At the end of the overall data

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collection period, we will readminister mail surveys of staff working in the participating offices. Additionally, we periodically collect updated information on the offices and on state policies and procedures that may affect program operations. Finally, we are analyzing data from large national data sets on local economic conditions that may affect employment outcomes for consumers in the localities around the country in which VR offices are participating in the study.

Characteristics of Consumers who Achieved an Employment Outcome**Table 3. Educational Characteristics at Application of Former VR Consumers Who Achieved an Employment Outcome**

Characteristic	Competitive employment outcome	Other employment outcomes		
<i>Highest degree obtained*</i>	<i>Percentage</i>	<i>Percentage</i>		
High school/GED	82.0	85.0		
Two-year associate's degree	6.9	4.6		
Four-year bachelor's degree	8.4	7.4		
Master's degree	2.4	2.9		
Doctoral degree	0.3	0.2		
Total	100.0	100.1		
	<i>Percentage</i>	<i>Percentage</i>		
<i>Did not complete high school</i>	24.1	24.9		
	<i>Percentage</i>	<i>Percentage</i>		
<i>Received special education services in high school</i>	23.4	32.9		
	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>
<i>Years of education completed</i>	12.3	12.0	11.8	12.0
	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>
<i>Reading achievement level</i>	8.5	9.0	6.9	5.3
<i>Mathematics achievement level</i>	7.8	7.0	6.5	5.0

* Percentages reflect persons who achieved at least a high school diploma or GED. As noted in the table, one-fourth of persons who achieved an employment outcome did not complete high school.

Source: VR Longitudinal Study, January 1998

Preliminary findings: data collection is ongoing

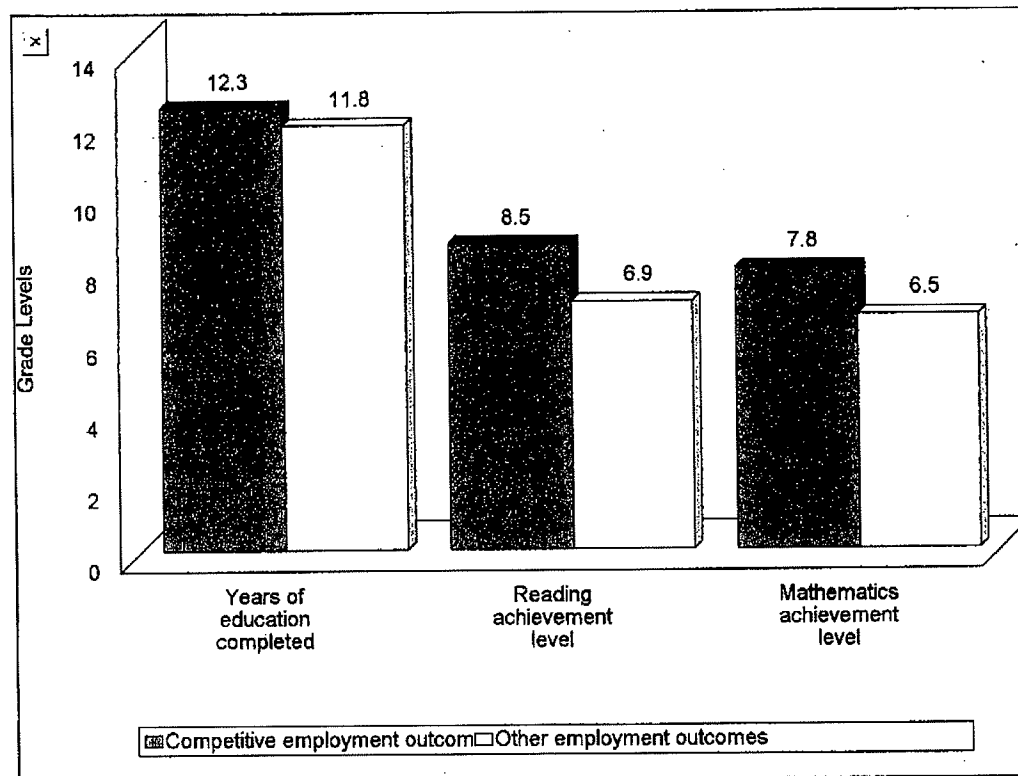
*Characteristics of Consumers who Achieved an Employment Outcome***Figure 3. Average Educational Status of Former Consumers With an Employment Outcome**

Table 4 (and Figure 4) describes the general work history of former consumers who achieved an employment outcome. As shown, most of these persons had worked at some point in their lives, although proportionally more persons with a noncompetitive outcome had never worked (9 percent, versus 3 percent of persons with a competitive job at closure).

Noncompetitively employed former consumers with some work experience were twice as likely not to have worked in the two years prior to their application for VR services (45 percent versus 22 percent) and were considerably more likely to fall in to the category of having worked in the two years prior to application, but not to be working at application (25 versus 38 percent).

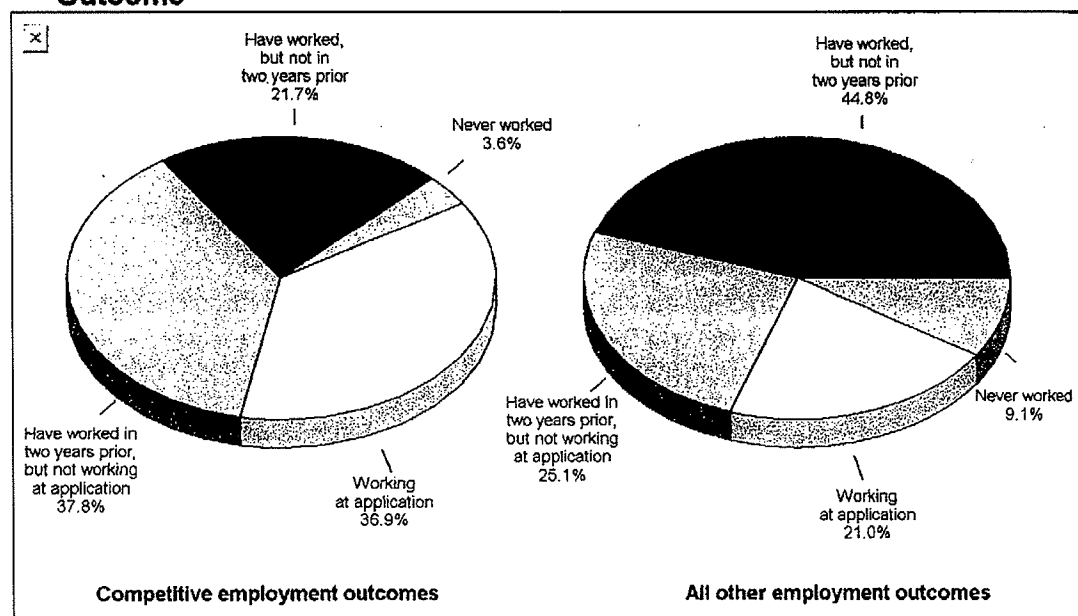
Finally, while only one-fifth of noncompetitively employed former consumers were working at the time of application, nearly two-fifths, or 37 percent, of those who eventually got a competitive job were working at application.

Characteristics of Consumers who Achieved an Employment Outcome**Table 4. Work History of Former VR Consumers Who Achieved an Employment Outcome**

Characteristic	Competitive employment Outcome	Other employment outcomes
<i>General work history</i>	<i>Percentage</i>	<i>Percentage</i>
Never worked for two consecutive weeks	3.6	9.1
Have worked, but not in 2 years prior to application to VR	21.7	44.8
Have worked in two years prior to VR entry, but not working at application to VR	37.8	25.1
Working at application to VR	36.9	21.0
Total	100.0	100.0

Source: VR Longitudinal Study, January 1998

Preliminary findings: data collection is ongoing

Figure 4. Work History of Former VR Consumers Who Achieved an Employment Outcome

Characteristics of Consumers who Achieved an Employment Outcome**Table 5. Characteristics of Job at Application for Former VR Consumers with an Employment Outcome Who Were Working at Application**

	Competitive employment outcome	Other employment outcomes
<i>Type of job at application</i>	<i>Percentage</i>	<i>Percentage</i>
Competitive labor market	90.6	45.7
Sheltered work	2.4	21.6
Self-employment	3.8	14.2
Supported employment	0.9	11.3
Homemaker	0.0	0.9
Unpaid family worker	0.4	0.9
Other	1.9	5.4

<i>Type of occupation at application</i>	<i>Percentage</i>	<i>Percentage</i>
Professional, managerial, or technical	22.1	15.7
Clerical/sales	25.3	18.1
Service	28.3	25.7
Agricultural, fishery, forestry	2.7	2.6
Processing	1.5	1.3
Machine trades	4.5	1.1
Benchwork	3.8	8.4
Structural work	5.8	3.1
Miscellaneous	6.0	24.0

<i>For persons working at application, hours worked and hourly wages</i>	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>
Hours worked per week	33.7	40.0	30.6	30.0
Hourly wages	\$8.14	\$6.30	\$5.92	\$4.80

Source: VR Longitudinal Study, January 1998

Preliminary findings: data collection is ongoing

*Characteristics of Consumers who Achieved an Employment Outcome***Table 6. Services Received by Former VR Consumers With an Employment Outcome**

Services	Competitive employment outcome	Other employment outcomes
<i>Number of services received</i>		
Mean	9.7	9.2
Median	8	8
Minimum	1	1
Maximum	161	102
<i>Provider arrangements</i>		
	<i>Percentage</i>	<i>Percentage</i>
Purchased	51.6	51.9
Provided by the agency	38.5	37.0
Arranged by the agency	1.6	1.7
Other	8.4	9.5
Total	100.0	100.0
<i>Types of services</i>		
Diagnostic and evaluation	25.3	27.4
Education and training	12.9	10.7
Physical/mental restoration	11.4	16.7
Counseling, guidance, and placement	33.8	28.7
Transportation, housing, and maintenance	12.1	9.7
Other (e.g., licenses, personal assistance)	4.5	6.9
Total	100.0	100.0

Source: VR Longitudinal Study, January 1998

Preliminary findings: data collection is ongoing

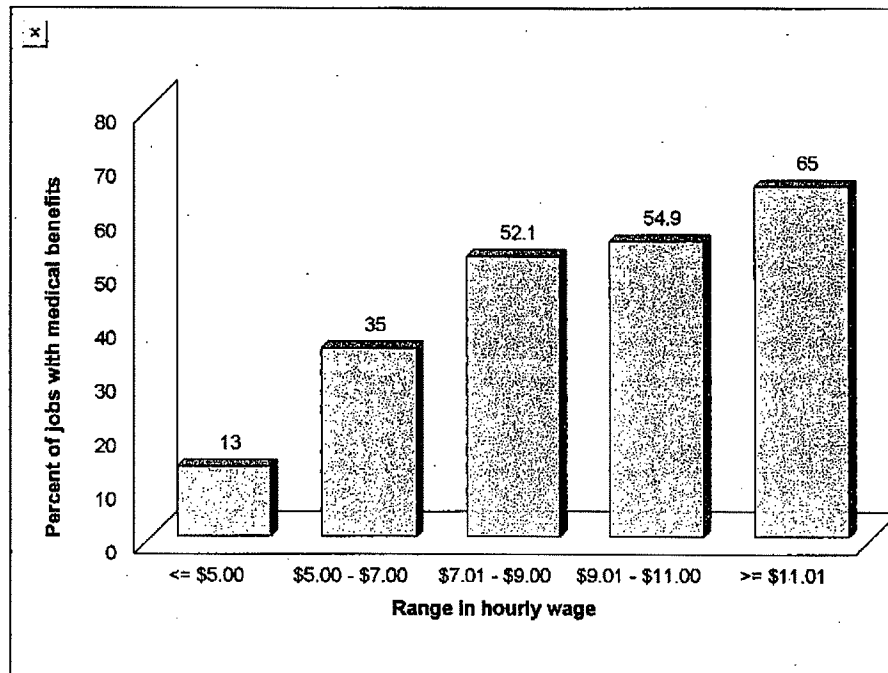
Persons with a noncompetitive outcome received slightly more diagnostic and evaluation, and physical or mental restoration, services than did their competitively employed peers. Providers of these services did not differ much across the two groups: slightly over half of all services were purchased from vendors, while over one-third were provided directly by agency-employed staff.

*Employment Experiences of Former Consumers With a Competitive Employment Outcome***Table 7. Characteristics of Job at Closure, for Former VR Consumers Who Obtained a Competitive Job Through VR**

Characteristic	Competitive employment outcome	
<i>Wages and hours</i>	<i>Mean</i>	<i>Median</i>
Hours worked per week	34.9	40.0
Hourly wages	\$7.35	\$6.00
<hr/>		
<i>Range in hourly earnings</i>	<i>Percentage in each range</i>	
<= \$5.00 per hour	31.5	
\$5.00 - \$7.00 per hour	31.0	
\$7.01 - \$9.00 per hour	16.6	
\$9.01 - \$11.00 per hour	8.8	
\$>= \$11.01 per hour	12.1	
Total	100.0	
<hr/>		
Receipt of medical benefits with job, by wage ranges	Percentage with medical benefits	
<= \$5.00 per hour	13.0	
\$5.00 - \$7.00 per hour	35.0	
\$7.01 - \$9.00 per hour	52.1	
\$9.01 - \$11.00 per hour	54.9	
\$>= \$11.01 per hour	65.0	
All jobs	36.2	
<hr/>		
Type of occupation for job at closure	Percentage	
Professional, managerial, technical	23.6	
Clerical/sales	21.8	
Service	23.0	
Agriculture, fishery, forestry	1.2	
Processing	1.2	
Machine trades	4.7	
Benchwork	5.5	
Structural work	2.7	
Miscellaneous	16.4	
Total	100.0	

Source: VR Longitudinal Study, January 1998

Preliminary findings: data collection is ongoing

*Employment Experiences of Former Consumers With a Competitive Employment Outcome***Figure 5. Receipt of Medical Benefits Through the Job, by Ranges in Hourly Earnings**

[1996] reported that in 1993, approximately 52 percent of all wage and salary workers in the United States were covered by a group health plan provided by their employer.)

Types of occupations in which consumers obtained jobs included professional, managerial, and technical (24 percent of jobs), service (23 percent), and clerical/sales occupations (22 percent). Very few consumers obtained jobs in processing, structural work, or agriculture.

Table 8 presents the distribution of hourly earnings by selected consumer characteristics, including severity of disability, years of education, and academic achievement levels. Research in disability and other fields has documented the association between these characteristics and hourly earnings. McNeil (1997), for example, reports that persons with severe disabilities earn significantly less than persons whose disabilities are nonsevere. Barton and Jenkins (1995) among others have documented the relationship between educational attainment and achievement and earnings. As shown in the table, competitively employed persons whose disability was

Employment Experiences of Former Consumers With a Competitive Employment Outcome**Table 8. Distribution of Earnings Levels for Job at Closure by Selected Consumer Characteristics, for Former VR Consumers Who Obtained a Competitive Job Through VR**

Characteristic	Competitive employment outcome	
	Mean	Median
<i>Mean and median hourly wage, by severity of disability</i>		
Most severe	\$7.08	\$6.00
Severe	\$7.31	\$6.03
Nonsevere	\$7.74	\$6.38
<i>Hourly earnings by years of education, for persons with competitive jobs</i>		
<i>Years of education</i>	Mean	Median
< high school	\$6.30	\$5.50
high school	\$7.05	\$6.00
> high school	\$9.07	\$7.61
<i>Hourly earnings by achievement level, for persons with competitive jobs</i>		
	Mean	Median
<i>Reading achievement level</i>		
<= 4th grade	\$5.51	\$5.00
5th to 8th grade	\$6.49	\$5.50
9th to 12th grade	\$7.24	\$6.25
> 12th grade	\$7.52	\$6.92
<i>Mathematics achievement level</i>		
<= 4th grade	\$5.56	\$5.00
5th to 8th grade	\$6.31	\$5.48
9th to 12th grade	\$7.48	\$6.37
> 12th grade	\$8.54	\$7.50

Source: VR Longitudinal Study, January 1998

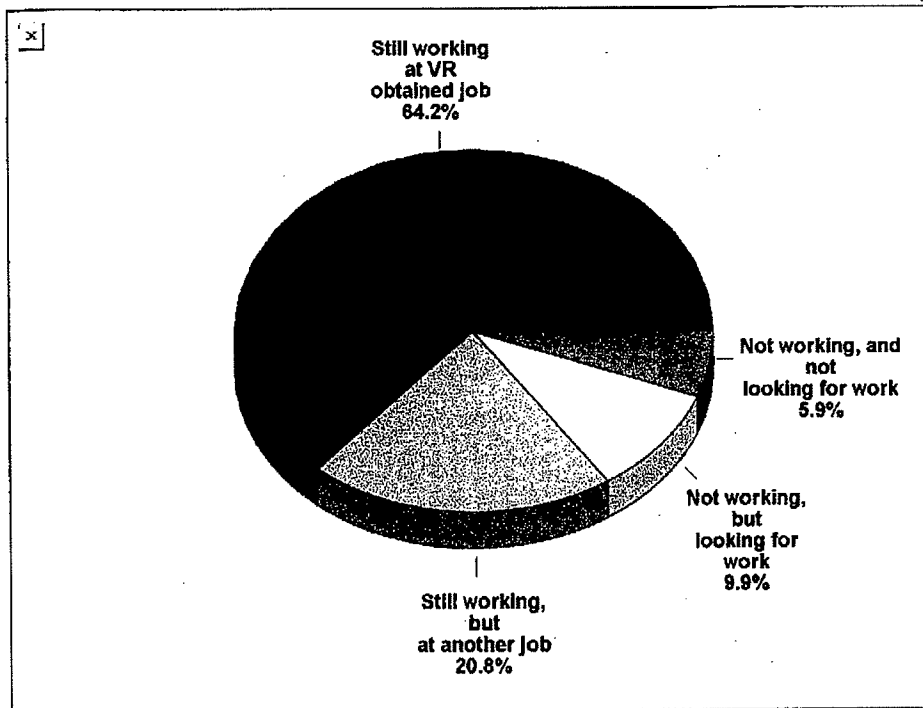
Preliminary findings: data collection is ongoing

Employment Experiences of Former Consumers With a Competitive Employment Outcome**Table 9. Employment Status at One-Year Follow up, for Former VR Consumers Who Obtained a Competitive Job Through VR**

Characteristic	Competitive employment outcome	
<i>Employment status at follow up</i>	<i>Percentage</i>	
Still working at job obtained through VR	64.2	
Still working, but at another job	20.8	
Not working, but looking for work	9.9	
Not working, and not looking for work	5.9	
Total	100.8	
<i>Percentage working at one-year follow up</i>	85.0	
<i>Hours worked and hourly wages for job at one-year follow up</i>	<i>Mean</i>	<i>Median</i>
Hours worked per week	35.7	40.0
Hourly wages	\$7.94	\$6.67
<i>Type of job for job at one-year follow up</i>	<i>Percentage</i>	
Competitive labor market	93.8	
Sheltered work	1.2	
Self-employed	3.8	
Supported employment	1.2	
Total	100.0	

Source: VR Longitudinal Study, January 1998

Preliminary findings: data collection is ongoing

*Employment Experiences of Former Consumers With a Competitive Employment Outcome***Figure 6. Employment Status One Year After Exit from VR**

The types of occupations in which former consumers with a competitive employment outcome worked at one year after VR had changed somewhat from those at closure (Table 10; see Table 7 for comparison). Nearly one-third (32 percent) were working in a professional, managerial, or technical field, while 22 percent were in service occupations and 20 percent were in clerical/sales positions. According to interviews with these study participants, nearly one-half (48 percent) were receiving medical benefits from their employer, an increase of 12 percent over the jobs they held at closure. Sixty percent reported receipt of vacation leave, and half received sick leave. Other benefits included life insurance (38 percent), retirement plans (34 percent), and dental coverage (33 percent). These findings suggest a general improvement in the employment and earnings status of former consumers with a competitive employment outcome: they were making more money, working more hours, and more frequently receiving health benefits one year after their entry into the competitive labor market than was the case with their initial jobs.

Employment Experiences of Former Consumers With a Competitive Employment Outcome**Table 10. Selected Characteristics of Jobs Held at One-Year Follow up for Consumers Who Obtained a Competitive Job Through VR**

Characteristic	Competitive employment outcome
<i>Type of occupation for job at one-year follow up</i>	<i>Percentage</i>
Professional, managerial, technical	30.5
Clerical/sales	19.7
Service	21.7
Agriculture, fishery, forestry	1.2
Processing	2.4
Machine trades	3.9
Benchwork	4.6
Structural work	2.1
Miscellaneous	13.9
Total	100.0
<i>Types of benefits provided through job held at one-year follow up</i>	<i>Percentage with benefit</i>
Health insurance	48.4
Vacation leave	60.0
Sick leave	49.9
Life insurance	37.9
Retirement/pension plan	34.4
Dental insurance	32.6
Other benefits	15.6

Source: VR Longitudinal Study, January 1998

Preliminary findings: data collection is ongoing

Employment Experiences of Former Consumers With a Competitive Employment Outcome**Table 11. Occupational Types of Jobs at Closure and Jobs at One-Year Follow Up for Consumers Who Obtained a Competitive Job Through VR**

Characteristic	Competitive employment outcome	
<i>Type of occupation of job at closure and at one-year follow up:</i>		
<i>persons who retained the same job</i>	<i>Percentage</i>	
Professional, managerial, technical	31.9	
Clerical/sales	22.0	
Service	22.9	
Agriculture, fishery, forestry	0.7	
Processing	1.3	
Machine trades	3.9	
Benchwork	4.4	
Structural work	1.5	
Miscellaneous	11.4	
Total	100.0	

<i>Type of occupation of job at closure and at one-year follow up:</i>		
<i>persons who changed jobs between closure and follow up</i>	<i>Job at closure</i>	<i>Job at follow up</i>
	<i>Percentage</i>	<i>Percentage</i>
Professional, managerial, technical	16.5	28.3
Clerical/sales	23.9	16.1
Service	16.2	19.8
Agriculture, fishery, forestry	2.3	1.9
Processing	1.3	4.3
Machine trades	5.7	4.0
Benchwork	6.5	4.7
Structural work	3.8	3.1
Miscellaneous	23.8	17.8
Total	100.0	100.0

<i>Type of occupation of job at closure for persons who were not working at one-year follow up</i>	
	<i>Percentage</i>
Professional, managerial, technical	14.4
Clerical/sales	19.3
Service	30.0
Agriculture, fishery, forestry	1.7
Processing	1.5
Machine trades	2.7
Benchwork	8.8
Structural work	2.6
Miscellaneous	19.0
Total	100.0

Source: VR Longitudinal Study, January 1998
Preliminary findings: data collection is ongoing

*Employment Experiences of Former Consumers With a Competitive Employment Outcome***Table 12. Consumers' Satisfaction with Selected Characteristics of Jobs Held at One-Year Follow Up, for Persons Who Obtained a Competitive Job Through VR**

Characteristic	Competitive employment outcome		
	<i>Very satisfied (percent)</i>	<i>Satisfied (percent)</i>	<i>Not satisfied (percent)</i>
<i>Selected job characteristics, for job at follow up</i>			
Earnings	13.3	54.3	32.4
Fringe benefits	17.3	44.2	38.6
Integration in the workplace	34.0	53.7	12.3
Opportunity for advancement	16.4	50.7	32.9
Employer support	33.1	51.3	15.6

Source: VR Longitudinal Study, January 1998

Preliminary findings: data collection is ongoing

Summary

Persons who obtained a competitive job through VR services worked an average of 35 hours per week (essentially full time) and earned \$7.35 per hour. Most, however, fell into the lower ranges of earnings: over 60 percent made \$7.00 or less per hour, in jobs that were less likely to provide medical benefits, an important issue for many persons with disabilities in terms of their employment decisions. Persons with relatively more education earned higher salaries. For example, persons without a high school diploma/GED earned about \$6.30 per hour (median of \$5.50), while those with more than a high school education earned an average of \$9.07 (median of \$7.61). More strikingly, persons with low reading and mathematics achievement levels suffered in terms of hourly wages. Those reading or computing at less than fourth grade level made two or three dollars less per hour than those achieving above the twelfth grade level.

One year after completing VR services, a high proportion of consumers who had achieved a competitive job through VR were still working: fully 85 percent were working, 64 percent in the job they obtained through VR. Their earnings and benefits status had improved over the year. Average hourly wages had increased to \$7.94 (median of \$6.67), and they worked on average an hour more

Employment Experiences of Former Consumers With a Competitive Employment Outcome

per week. Further, nearly half reported receipt of medical benefits (versus 36 percent in their job at closure), along with receipt of other benefits (60 percent received vacation leave and 50 percent received sick leave). Finally, a high proportion were satisfied with their sense of belonging in their workplace (88 percent of consumers) and with the support they received from their employer that facilitated retention of employment (84 percent). Somewhat fewer were satisfied with their earnings, benefits, or opportunity for advancement, although well over half were satisfied with these dimensions of their jobs as well.

Longitudinal Study of the Vocational Rehabilitation Service Program

Highlights & Significance



Background

Conducted by RTI International for RSA
Study mandated by Congress
Initiated in the fall of 1992
Assess performance of Public VR Program
Study sample: 40 local VR offices; 30 states;
8,500 applicants
Tracked over three year period



Report 1: How Consumer Characteristics Affect Access to, Receipt of, and Outcomes of VR Services

How demographics affect access to and receipt of VR services

21.3 million working-age Americans have a
disability
3.3 million of those persons might benefit from
VR services
In FY 95, the VR Program served 1.25 million
persons
In 2001, 233,000 individuals entered the
workforce, earned \$3.4 billion in wages and
paid \$977 million in federal/state/local, Social
Security and Medicare taxes (Ref. CSAVR)



**Report 1: How Consumer Characteristics Affect
Access to, Receipt of, and Outcomes of VR Services**
continued

Characteristics that made a person more likely
to be accepted for VR services:

- ☐ Higher self-esteem
- ☐ Significant disability
- ☐ Receiving financial assistance such as
SSI/SSDI

Eligibility for services was not related to a
person's age, gender, race or work history
(except for current employment)



**Report 1: How Consumer Characteristics Affect
Access to, Receipt of, and Outcomes of VR Services**
continued

At end of study period, 69% of VR consumers
achieved an employment outcome as a result of
VR services

Of those achieving an employment outcome,
75% were working at jobs in the competitive
labor market; 25% held non-competitive jobs



**Report 1: How Consumer Characteristics Affect
Access to, Receipt of, and Outcomes of VR Services**
continued

More than 80% of persons who are eligible for
and receive VR services have a disability that
meets the VR Program's criteria as significant or
most significant (*state determined*)



Report 1: Significance (CSAVR determined)

The Public VR Program is successful at placing individuals with disabilities in both competitive and non-competitive jobs



Report 2: VR Services and Outcomes

Details of services received and relationship between receipt of services and outcomes

97.6% of VR consumers received an average of 12 services (assessment, counseling, job placement, on-the-job training, etc.)

84% received medical, psychological or psychiatric evaluation

20.7% of consumers received assistive technology



Report 2: VR Services and Outcomes

Details of services received and relationship between receipt of services and outcomes

Services that increase the likelihood of higher earnings include receipt of assistive technology devices, participation in business/vocational training, two- or four-year college/university, and receipt of tools, uniforms, equipment or stock

Of those achieving an employment outcome, 83% were working after one year; 79% after two years; 76% after three years



Report 2: VR Services and Outcomes
continued

These consumers earned an average of \$7.33/hour; rate increased to \$9.62/hour after three years (*minimum wage is \$5.15/hour*)
At exit from the VR Program, 32% of consumers in competitive jobs were earning about \$15,990/year (*200% above poverty level*)
Among individuals who completed VR services, 44% no longer needed public assistance



Report 2: VR Services and Outcomes
continued

The quality of the relationship between the consumer and counselor was significantly related to employment and earning levels
66% of persons exiting the program into competitive jobs said if they had to pay for services, they would purchase "exactly the same" services they received from the VR Program



Report 2: Significance (CSAVR determined)

VR consumers successfully retain their employment and increase their wages and attribute this success to the VR services and counselors